

To Whom It May Concern:

1. The source (s) of recently detected perchlorate and other contaminants in soils and sediments of Dayton Canyon/Creek has not been confirmed. Potentially seeps and springs associated with fractures/faults could transport perchlorate from the higher potential areas (SSFL) towards the lower potential areas (Dayton Canyon area). If there is (are) any old “dumps” in the area where perchlorate-related wastes have been disposed of, this obviously could be another alternative source for perchlorate detected in the sediments of the Canyon/Creek. Based on available data, the aforementioned sources cannot and have not been confirmed. So far the only confirmed place where perchlorate compounds have been used, stored, and disposed of is related to the activities at the SSFL. Further, it has been confirmed and was revealed to the general public in February 2003 that perchlorate has been entered Dayton Canyon by runoff generated at the SSFL (Happy Valley area). Then, it is likely that source of perchlorate in Dayton Canyon is from the SSFL.

In rivers and canyons, contaminants can be transported as part of the dissolved load and/or bedload/suspended load if the contaminants are instilled in sediments and concrete particles. Wherever these contaminated particles accumulate, then contaminants such as perchlorate can slowly leach out and concentrate under evaporation. As a general rule, along any canyon and creek, in the areas where the canyon is narrow, the stream bed is rocky, and the gradient is steep, sediments and the associated contaminants can easily be transported down the stream/canyon. In the areas where the gradient is gentle and the canyon is wide, water velocity decreases and sediments and the associated contaminants can accumulate. Furthermore, in the areas of the Canyon with gentle gradient, contaminated water velocity decreases and can go under evaporation and in turn contaminant concentration can increase.

Based on the recent discovery of perchlorate at high concentrations in sediments of the Canyon, it has been theorized that high concentrations of perchlorate in the sediments of Dayton Creek are probably due to “pooling” of contaminated water and its evaporation. During a recent tour of the area, the general setting and geometry of the Creek have further reinforced the idea of pooling, evaporation, concentration and the possibility of transportation of perchlorate as part of bedload/suspended load and its deposition in low gradient areas and near the confluence of stream tributaries. The agencies involved in characterization and remediation of the Canyon, may want to keep the above model in mind as they are trying to characterize the extent and source(s) of contaminants detected in Dayton Creek/Canyon. In addition, the many minor side tributaries could dramatically influence hydraulics of the Creek and the concentration of perchlorate detected in sediments of the Creek/Canyon.

2. During my tour of the Canyon, I noticed that many rocks and boulders along the creek are coated with salt. For remedial purposes, it is important to understand the composition of the “salt” associated with these rocks.

3. It would be beneficial to the project to not only characterize the extent of perchlorate contamination in the unsaturated zone, but also the saturated zone, especially at and down gradient areas of where perchlorate has been detected at high concentrations. Perchlorate

concentrations in soil samples obtained from depths of up to a few feet have shown low perchlorate concentrations. Soil profile's B-horizon is usually rich with clay minerals and this zone is usually located within the top few feet of the unsaturated zone. B-horizons that are rich with clay minerals with available negative charges can reduce the potential for accumulation of negatively charged ions such as perchlorate. As a result, the recently observed low concentrations of perchlorate at depths of a few feet is not necessarily confirmation that perchlorate has not entered the saturated and deeper parts of the unsaturated zone. Without a detailed soil sample description (composition and texture) and sampling and monitoring of the saturated and unsaturated zones and contaminant-source identification, it will not be possible to effectively delineate, characterize and remediate the contaminated soils and waters of the area.

Thank you for the opportunity to comment on this project.

Sincerely,
Ali Tabidian